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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,056	12/03/2001	Joshua G. Poley	MS1-872US	6226

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EXAMINER
GUILL, RUSSELL L

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 05/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/007,056	POLEY ET AL.
	Examiner	Art Unit	
	Russ Guill	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE **3** MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *04 April 2006*.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-14 and 28-33* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-14 and 28-33* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *03 December 2001* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a) ☐ All   b) ☐ Some *   c) ☐ None of:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____.

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to a <u>Request for Continued Examination</u> filed April 4, 2006.

   Claims 1 – 14 and 28 - 33 are pending. Claims 1 – 14 and 28 - 33 have been examined.

   Claims 1 – 14 and 28 - 33 have been rejected.

2. **The Examiner would like to thank the Applicant for the well-presented response,**

   which was useful in the examination process.

Continued Examination Under 37 CFR 1.114

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37

   CFR 1.17(e), was filed in this application after final rejection. Since this application is

   eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR

   1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn

   pursuant to 37 CFR 1.114. Applicant's submission filed on February 7, 2006 has been

   entered.

Response to Remarks

4. Regarding **claim 1** rejected under 35 U.S.C § 103:

   4.1.   Applicant's arguments, see page 15, lines 5 – 12, and page 15, lines 22 – 25, and

   page 16, lines 1 - 17, have been fully considered and are persuasive. Therefore, the

   rejection has been withdrawn. However, upon further consideration, a new ground(s) of

   rejection is made as detailed below in the section for rejections under 35 USC §103. In

   summary, the Applicant argued that the art of Frantz did not teach or suggest, "receiving

   USB response messages sent from the peripheral emulator to the interface device through

the network communications protocol, and then sending the received USB response

messages from the interface device through the one or more USB interfaces to the in-test

host." Therefore, new art has been used in the claim rejection to clearly teach the

limitation, but also, the Examiner has included additional textbook art, that was not used

in the rejection, that teaches an old and well known technique of "tunneling," wherein one

network protocol is transported inside another network protocol to bridge between two

networks. The additional art is recited in the Conclusion section of this Office Action.

5. Regarding **claim 28** rejected under 35 U.S.C § 103:

5.1.   Applicant's arguments, see pages 18 - 20, have been fully considered and are

persuasive. Therefore, the rejection has been withdrawn. However, upon further

consideration, a new ground(s) of rejection is made as detailed below in the section for

rejections under 35 USC § 103.

6. The Examiner would like to draw the Applicant's attention to new rejections under 35 USC

101 included in this Office Action.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or
composition of matter, or any new and useful improvement thereof, may obtain a patent
therefor, subject to the conditions and requirements of this title.

8. Claims 28 – 33 are rejected under 35 U.S.C. 101 because the claimed invention is directed

to non-statutory subject matter.

8.1. Regarding **claims 28 - 33**, the claims do not appear to produce a useful and

tangible result to form the basis of a practical application needed to be statutory.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described
as set forth in section 102 of this title, if the differences between the subject matter sought
to be patented and the prior art are such that the subject matter as a whole would have
been obvious at the time the invention was made to a person having ordinary skill in the
art to which said subject matter pertains. Patentability shall not be negatived by the
manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims

under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent

any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to

point out the inventor and invention dates of each claim that was not commonly owned at

the time a later invention was made in order for the examiner to consider the applicability

of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. **Claims 1 - 2, 4 and 11 - 12** are rejected under 35 U.S.C. 103(a) as being unpatentable

over Frantz (U.S. Patent 6,636,929, October 21, 2003) in view of IbmTechnicalDisclosure

(IBM Technical Disclosure Bulletin, "Multiple Control Unit/Device Emulator for Testing

Computer Programs", September 1971, Volume 14, Issue 4, pages 1212 - 1213), further in view of McAlear (U.S. Patent 6,389,029).

11.1.   The art of Frantz is directed toward a system in which a first computer couples to an interface unit via a Universal Serial Bus (USB), and the interface unit couples to a remote computer (*column 1, lines 22 –32*) via a network link (*column 7, lines 9 – 15; and figure 1, element 175; and column 3, lines 65 – 68; and column 4, lines 1 - 30*) such that peripherals and input/output devices of the remote computer appear as peripherals and input/output devices of the first computer (*column 1, lines 22 –32*).

11.2.   The art of IbmTechnicalDisclosure is directed toward using a second computer to emulate multiple input/output devices such that it can be attached to a first computer for testing the first computer system and its computer programs (*page 1212, first paragraph*). It also provides the capability for testing programs that drive currently unavailable devices (*page 1212, first paragraph*).

11.3.   The art of McAlear is directed to a local area network incorporating the universal serial bus (USB) protocol (*Title*).

11.4.   Frantz appears to teach USB peripheral devices (*Abstract, third sentence*).

11.5.   Frantz appears to teach one or more USB interfaces configured to communicate with one or more USB ports of the host to communicate USB messages with the host (*figure 1, elements 150 and 125; and column 5, lines 65 – 67; and column 6, lines 1 – 4 and lines 42 – 45*).

11.6.   Frantz appears to teach a network interface configured to communicate with a peripheral using a network communications protocol (*figure 1, elements 150, 160, 175, 265, 250, 240, 245; and figure 2, elements 170, 270, 285, 290, 240, 245, 295*).

11.7. Frantz appears to teach operating logic configured to perform actions comprising:

11.7.1.   Receiving USB command messages sent from the host to the interface device (*column 10, lines 55 – 67; and column 11, lines 1 – 21; and figure 2*);

11.7.2.   Sending the received command messages from the interface device to the peripheral through the network interface using the network communications protocol (*figure 2; and figure 3, elements "queries to USB function logic and system prompts", "prompts", "Communicate over appropriate interface"; and column 5, lines 65 – 67; and column 6, lines 1 – 47*).

11.7.3.   Receiving response messages sent from the peripheral to the interface device through the network interface using the network communications protocol (*figure 2; and figure 3, elements "communicate over appropriate interface", "instructions", and "remote activity translated to USB"; and column 5, lines 65 – 67; and column 6, lines 1 – 67*);

11.7.4.   Sending the received response messages from the interface device through the one or more USB interfaces to the host (*figure 2, and figure 3; and column 7, lines 45 – 60*).

11.8. Frantz does not specifically teach one or more USB interfaces configured to communicate with one or more USB ports of the *in-test* host to communicate USB messages with the *in-test* host.

11.9. Frantz does not specifically teach a network interface configured to communicate with a peripheral *emulator* using a network communications protocol.

11.10. Frantz does not specifically teach operating logic configured to perform actions comprising:

11.10.1. Receiving USB command messages sent from the *in-test* host to the interface device;

11.10.2. Sending the received *USB* command messages from the interface device to the peripheral *emulator* through the network interface using the network communications protocol;

11.10.3. Receiving *USB* response messages sent from the peripheral *emulator* to the interface device through the network interface using the network communications protocol;

11.10.4. Sending the received *USB* response messages from the interface device through the one or more USB interfaces to the *in-test* host.

11.11. IbmTechnicalDisclosure appears to teach an *in-test* host (*page 1212, first paragraph labeled 2p*) and a peripheral *emulator* (*page 1212, first paragraph labeled 2p*).

11.12. McAlear appears to teach:

11.12.1. Sending *USB* command messages from an interface device to a peripheral through a network interface using a network communications protocol (*figure 7A, elements 40, 50, 30, 10, 90, 80, 100; and column 24, lines 25 - 55*);

11.12.2. Receiving *USB* response messages sent from a peripheral to an interface device through a network interface using a network communications protocol (*figure 7A, elements 40, 50, 30, 10, 90, 80, 100; and column 24, lines 25 - 55*);

11.12.3. Sending received **USB** response messages from an interface device a host **(figure 7B, elements 100, 80, 90, 10, 120, 110, 140, 130; and column 24, lines 25 – 55).**

11.13. The motivation to use the art of IbmTechnicalDisclosure with the art of Frantz would have been because an ordinary artisan at the time of invention needing to test a first computer communicating with a USB peripheral device across a network, where the peripheral device was not yet available (as taught in IbmTechnicalDisclosure), would have emulated the USB peripherals (as taught in Frantz, in the Abstract, third sentence) and used the art of IbmTechnicalDisclosure with the art of Frantz to perform the test. The ordinary artisan would have known that a cost and time benefit would result from testing a first computer before the peripheral device was available.

11.14. The motivation to use the art of McAlear with the art of Frantz would have been the benefit recited in McAlear that the invention overcomes the reach limitations of the USB protocol **(column 9, lines 11 – 15)**, which would have been recognized by the ordinary artisan as overcoming a significant limitation of the USB protocol.

11.15. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Frantz with the art of IbmTechnicalDisclosure and McAlear to produce the claimed invention.

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11.16. Regarding **claim 2**:

11.16.1. Frantz appears to teach USB peripheral devices (**Abstract, third sentence**).

11.16.2.   Frantz does not specifically teach a peripheral emulator that is programmed to emulate one or more USB peripherals.

11.16.3.   IbmTechnicalDisclosure appears to teach a peripheral emulator that is programmed to emulate one or more peripherals (***page 1212, first paragraph labeled 2p***).

11.17. Regarding **claim 4**:

11.17.1.   Frantz appears to teach USB peripheral devices (***Abstract, third sentence***).

11.17.2.   Frantz does not specifically teach a peripheral emulator that comprises a general-purpose computer programmed to emulate one or more USB peripherals.

11.17.3.   IbmTechnicalDisclosure appears to teach a peripheral emulator that comprises general-purpose computer programmed to emulate one or more peripherals (***page 1212, first paragraph labeled 2p, and second paragraph***).

11.18. Regarding **claim 11**:

11.18.1.   Frantz appears to teach an Ethernet network interface (***column 4, lines 1 – 6***).

   11.18.1.1. Regarding (***column 4, lines 1 – 6***); it would have been obvious that an Ethernet communications line uses an Ethernet network interface.

11.19. Regarding **claim 12**:

11.19.1.   Frantz appears to teach an Ethernet network communications protocol (***column 4, lines 1 – 6***).

11.19.1.1. Regarding (*column 4, lines 1 – 6*); it would have been obvious that an Ethernet communications line uses an Ethernet network communications protocol.

12. **Claims 3, 5 and 9 - 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent 6,636,929, October 21, 2003) in view of IbmTechnicalDisclosure (IBM Technical Disclosure Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs", September 1971, Volume 14, Issue 4, pages 1212 - 1213), further in view of McAlear (U.S. Patent 6,389,029) as applied to **claims 1 - 2, 4 and 11 - 12** above, further in view of UsbHidClassDefinition (Universal Serial Bus, "Device Class Definition for Human Interface Devices (HID)", Version 1.11,June 27, 2001), further in view of UsbSpecs ("Universal Serial Bus Specification", Revision 1.1, September 23, 1998).

12.1. Frantz as modified by IBMTechnicalDisclosure and McAlear teaches the interface device for testing an in-test host's support of USB peripherals as recited in **claims 1 - 2, 4 and 11 - 12** above.

12.2. The art of UsbSpecs is directed to specifications for Universal Serial Bus Specifications (Title).

12.3. The art of UsbHidClassDefinition is directed to specifications for device class definition for human interface devices (HID).

12.4. Regarding **claim 3**:

12.4.1. Frantz appears to teach USB peripheral devices (*Abstract, third sentence*).

12.4.2. Frantz does not specifically teach a peripheral emulator programmed to emulate HID, bulk, and isochronous USB peripherals.

12.4.3. IbmTechnicalDisclosure appears to teach a peripheral emulator that is programmed to emulate one or more peripherals (***page 1212, first paragraph labeled 2p***).

12.4.4. UsbHidClassDefinition appears to teach HID peripherals (***page 1, section 2.1 Scope***).

12.4.5. UsbSpecs appears to teach bulk (***page 46, section 5.8 Bulk Transfers***) and isochronous (***page 41, section 5.6 Isochronous Transfers***) peripherals.

12.5. Regarding **claim 5**:

12.5.1. Frantz appears to teach USB peripheral devices (***Abstract, third sentence***).

12.5.2. Frantz does not specifically teach a peripheral emulator comprising a general-purpose computer programmed to emulate HID, bulk, and isochronous USB peripherals.

12.5.3. IbmTechnicalDisclosure appears to teach a peripheral emulator comprising a general-purpose computer that is programmed to emulate one or more peripherals (***page 1212, first paragraph labeled 2p, and second paragraph***).

12.5.4. UsbHidClassDefinition appears to teach HID peripherals (***page 1, section 2.1 Scope***).

12.5.5.   UsbSpecs appears to teach bulk (***page 46, section 5.8 Bulk Transfers***)
and isochronous (***page 41, section 5.6 Isochronous Transfers***) peripherals.

12.6.   Regarding claims 3 and 5:

12.6.1.   The motivation to use the art of UsbHidClassDefinition and UsbSpecs
with the art of Frantz as modified by IBMTechnicalDisclosure and McAlear would have
been because an ordinary artisan at the time of invention needing to test USB
peripheral devices of the types HID, bulk, and isochronous, where the peripheral device
was not yet available (as taught in IbmTechnicalDisclosure), would have emulated the
USB peripherals (as taught in Frantz, in the Abstract, third sentence) and used the art
of UsbHidClassDefinition and UsbSpecs with the art of Frantz as modified by
IBMTechnicalDisclosure and McAlear to perform the test.

12.7.   Regarding **claim 10**:

12.7.1.   Frantz does not specifically teach that USB messages comprise HID, bulk
and isochronous USB messages.

12.7.2.   UsbSpecs appear to teach that USB messages comprise bulk and
isochronous USB messages (***page 41, section 5.6 Isochronous Transfers; and page
46, section 5.8 Bulk Transfers***).

12.7.3.   UsbHidClassDefinition appears to teach HID USB messages (***page 4, the
figure below the third paragraph***).

12.7.4.   The motivation to use the art of UsbSpecs with the art of Frantz as
modified by IBMTechnicalDisclosure and McAlear would have been because an ordinary

artisan at the time of invention needing to test USB peripheral devices of the bulk and

isochronous types would have needed the bulk and isochronous USB messages in

UsbSpecs.

12.7.5.   The motivation to use the art of UsbHidClassDefinition with the art of

Frantz as modified by IBMTechnicalDisclosure and McAlear would have been because

an ordinary artisan at the time of invention needing to test a USB peripheral device of

the HID type would have needed the HID USB message in UsbHidClassDefinition.

12.8.   Therefore, as discussed above, it would have been obvious to the ordinary artisan at

the time of invention to use the art of UsbHidClassDefinition and UsbSpecs with the art of

Frantz as modified by IBMTechnicalDisclosure and McAlear to produce the claimed

invention.

13. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent

6,636,929, October 21, 2003) in view of IbmTechnicalDisclosure (IBM Technical Disclosure

Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs",

September 1971, Volume 14, Issue 4, pages 1212 - 1213), further in view of McAlear (U.S.

Patent 6,389,029) as applied to **claims 1 - 2, 4 and 11 - 12** above, further in view of

UsbSpecs ("Universal Serial Bus Specification", Revision 1.1, September 23, 1998).

13.1.   Frantz as modified by IBMTechnicalDisclosure and McAlear teaches the interface

device for testing an in-test host's support of USB peripherals as recited in **claims 1 - 2, 4**

and 11 - 12 above.

13.2.   Regarding **claim 9**:

13.2.1.   Frantz does not specifically teach that a USB interface comprises at least

four USB interfaces.

13.2.2.   UsbSpecs appears to teach a USB interface that comprises at least four

USB interfaces (*page 22, 4-3*).

13.3.   The motivation to use the art of UsbSpecs with the art of Frantz as modified by

IBMTechnicalDisclosure and McAlear would have been because an ordinary artisan at the

time of invention needing to test a large number of USB peripheral devices would have

needed the multiple interfaces provided in UsbSpecs.

13.4.   Therefore, as discussed above, it would have been obvious to the ordinary artisan at

the time of invention to use the art of UsbSpecs with the art of Frantz as modified by

IBMTechnicalDisclosure and McAlear to produce the claimed invention.

14. **Claims 6 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz

(U.S. Patent 6,636,929, October 21, 2003) in view of IbmTechnicalDisclosure (IBM

Technical Disclosure Bulletin, "Multiple Control Unit/Device Emulator for Testing

Computer Programs", September 1971, Volume 14, Issue 4, pages 1212 - 1213), further in

view of McAlear (U.S. Patent 6,389,029) as applied to **claims 1 - 2, 4 and 11 - 12** above,

further in view of McConnell (McConnell, Steve; "Code Complete", 1993, Microsoft Press).

14.1.   Frantz as modified by IBMTechnicalDisclosure and McAlear teaches the interface

device for testing an in-test host's support of USB peripherals as recited in **claims 1 - 2, 4**

and 11 - 12 above.

14.2.   The art of McConnell is directed toward software construction (Book cover),

including testing (*page 589, chapter title*).

14.3.   Regarding **claim 6**:

14.3.1.   Frantz appears to teach USB peripheral devices (*__Abstract, third__*

__sentence__).

14.3.2.   Frantz appears to teach that a peripheral generates response messages

to a host with peripheral parameters (*__figure 2; and figure 3, elements__*

__"communicate over appropriate interface", "instructions", and "remote activity__

__translated to USB", elements 155 and 315; and column 5, lines 65 – 67; and__

__column 6, lines 1 – 67__);

14.3.3.   Frantz does not specifically teach *__a peripheral emulator comprises a__*

__general-purpose computer__.

14.3.4.   Frantz does not specifically teach *__a general-purpose computer__*

__programmed to emulate one or more USB peripherals__.

14.3.5.   Frantz does not specifically teach a *__general-purpose computer__* further

programmed to generate *__USB__* response messages *__that test the in-test__* host with ranges

of *__USB__* peripheral parameters.

14.3.6.   IbmTechnicalDisclosure appears to teach a peripheral emulator

comprises a general-purpose computer (*__page 1212, first paragraph labeled 2p and__*

__second paragraph__).

14.3.7.   IbmTechnicalDisclosure appears to teach a general-purpose computer

programmed to emulate one or more peripherals (*__page 1212, first paragraph labeled__*

__2p and second paragraph__).

14.3.8.   IbmTechnicalDisclosure appears to teach testing an in-test host (*__page__*

__1212, first paragraph labeled 2p and second paragraph__).

14.3.9.   McConnell appears to teach testing with ranges of parameters (*__page__*

__604, section "Classes of Good Data", especially bullet "Maximum normal__

__configuration"__).

14.4.   Regarding **claim 7**:

14.4.1.   Frantz appears to teach USB peripheral devices (*__Abstract, third__*

__sentence__).

14.4.2.   Frantz appears to teach that a peripheral generates response messages

to a host with peripheral parameters (*__figure 2; and figure 3, elements__*

__"communicate over appropriate interface", "instructions", and "remote activity__

__translated to USB", elements 155 and 315; and column 5, lines 65 – 67; and__

__column 6, lines 1 – 67__);

14.4.3.   Frantz does not specifically teach *__a peripheral emulator comprises a__*

__general-purpose computer__.

14.4.4.   Frantz does not specifically teach *__a general-purpose computer__*

__programmed to emulate one or more USB peripherals__.

14.4.5.   Frantz does not specifically teach a *__general-purpose computer__* further

programmed to generate *__abnormal USB__* response messages *__in order to test the in-__*

__test__ host with *__such abnormal USB__* response messages.

14.4.6.   IbmTechnicalDisclosure appears to teach a peripheral emulator comprises a general-purpose computer (*page 1212, first paragraph labeled 2p and second paragraph*).

14.4.7.   IbmTechnicalDisclosure appears to teach a general-purpose computer programmed to emulate one or more peripherals (*page 1212, first paragraph labeled 2p and second paragraph*).

14.4.8.   IbmTechnicalDisclosure appears to teach testing an in-test host (*page 1212, first paragraph labeled 2p and second paragraph*).

14.4.9.   McConnell appears to teach testing with abnormal parameters (*page 603, section "Classes of Bad Data", especially bullet "the wrong kind of data (invalid data)"*).

14.5.   The motivation to use the art of McConnell with the art of Frantz as modified by IbmTechnicalDisclosure and McAlear would have been the testing methods taught in McConnell, which would have been recognized as valuable time and cost saving methods by the ordinary artisan.

14.6.   Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of McConnell with the art of Frantz as modified by IBMTechnicalDisclosure and McAlear to produce the claimed invention.

15. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent 6,636,929, October 21, 2003) in view of IbmTechnicalDisclosure (IBM Technical Disclosure Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs", September 1971, Volume 14, Issue 4, pages 1212 - 1213), further in view of McAlear (U.S.

Patent 6,389,029) as applied to **claims 1 - 2, 4 and 11 - 12** above, further in view of UsbSpecs ("Universal Serial Bus Specification", Revision 1.1, September 23, 1998), further in view of Tanenbaum (Tanenbaum, Andrew S.; "Computer Networks", third edition, 1996, Pentice-Hall).

15.1. Frantz as modified by IBMTechnicalDisclosure and McAlear teaches the interface device for testing an in-test host's support of USB peripherals as recited in **claims 1 - 2, 4 and 11 - 12** above.

15.2. The art of Tanenbaum is directed to computer communication networks (***Title***).

15.3. The art of UsbSpecs is directed to specifications for Universal Serial Bus Specifications (Title).

15.4. Frantz appears to teach USB peripheral devices (***Abstract, third sentence***).

15.5. Frantz appears to teach that a particular command message is designated for a particular one of a plurality of different emulated peripheral devices (***column 3, lines 65 – 68; and column 4, lines 1 – 30***).

15.5.1. Regarding (***column 3, lines 65 – 68; and column 4, lines 1 – 30***); since there were a plurality of peripheral devices, it would have been obvious that a command message is designated for a particular one of the peripherals.

15.6. Frantz appears to teach operating logic (***column 3, lines 65 – 68; and column 4, lines 1 – 30***).

15.7. Frantz does not specifically teach that a particular ___USB___ command message is designated for a particular one of a plurality of different emulated peripheral devices.

15.8. Frantz does not specifically teach that the network communications protocol supports a plurality of logical ports.

15.9. Frantz does not specifically teach that the operating logic maintains a correspondence between emulated peripheral devices and logical ports.

15.10. Frantz does not specifically teach that the operating logic sends said particular USB command message to one of the logical ports that corresponds to said one of the plurality of the different emulated peripheral devices.

15.11. Tanenbaum appears to teach a network communications protocol that supports a plurality of logical ports (*__pages 486 – 487, section labeled "Berkeley Sockets"__, __especially figure 6-6, primitives SOCKET and BIND__*).

    15.11.1.   Regarding (*__pages 486 – 487, section labeled "Berkeley Sockets"__, __especially figure 6-6, primitives SOCKET and BIND__*); it would have been obvious that the network communications protocol supports a plurality of logical ports, because multiple sockets and addresses can be created.

15.12. UsbSpecs appears to teach that operating logic maintains a correspondence between peripheral devices and logical ports (*__page 21, section 4.8.1 Device Characterizations, first sentence__*).

    15.12.1.   Regarding (*__page 21, section 4.8.1 Device Characterizations, first sentence__*); it would have been obvious that operating logic was used to maintain a correspondence between a peripheral device and an address (a type of logical port).

15.13. UsbSpecs appears to teach operating logic sends a particular USB command message to one of the ports that corresponds to one of a plurality of different peripheral

devices (*page 21, section 4.8.1 Device Characterizations, first sentence; and page 36, section 5.5 Control Transfers, second sentence*).

15.13.1.   Regarding (*page 21, section 4.8.1 Device Characterizations, first sentence; and page 36, section 5.5 Control Transfers, second sentence*); it would have been obvious that operating logic sends a particular USB command message to one of the ports that corresponds to one of a plurality of different peripheral devices.

15.14. The motivation to use the art of UsbSpecs with the art of Frantz as modified by IBMTechnicalDisclosure and McAlear would have been because an ordinary artisan at the time of invention needing to test USB peripheral devices would have needed the USB specifications, and the USB specifications are provided by UsbSpecs.

15.15. The motivation to use the art of Tanenbaum with the art of Frantz as modified by IBMTechnicalDisclosure and McAlear would have been because an ordinary artisan at the time of invention needing to test USB peripheral devices, where the peripheral devices were available across a network, would have needed a network communications protocol, and Tanenbaum provides a network communication protocol (Berkeley sockets).

15.16. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of UsbSpecs and Tanenbaum with the art of Frantz as modified by IBMTechnicalDisclosure and McAlear to produce the claimed invention.

16. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent 6,636,929, October 21, 2003) in view of IbmTechnicalDisclosure (IBM Technical Disclosure Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs", September 1971, Volume 14, Issue 4, pages 1212 - 1213), further in

view of McAlear (U.S. Patent 6,389,029) as applied to **claims 1 - 2, 4 and 11 - 12** above, further in view of Tanenbaum (Tanenbaum, Andrew S.; "Computer Networks", third edition, 1996, Pentice-Hall).

16.1. Frantz as modified by IBMTechnicalDisclosure and McAlear teaches the interface device for testing an in-test host's support of USB peripherals as recited in **claims 1 - 2, 4 and 11 - 12** above.

16.2. The art of Tanenbaum is directed to computer communication networks (*__Title__*).

16.3. Regarding **claim 12**:

16.3.1.   Frantz does not specifically teach the IP network communications protocol.

16.3.2.   Tanenbaum appears to teach the IP network communication protocol (*__page 412, last paragraph that starts with "The glue . . ."__*).

16.3.3.   The motivation to use the art of Tanenbaum with the art of Frantz as modified by IbmTechnicalDisclosure and McAlear would have been because an ordinary artisan at the time of invention using the Internet communications line of Frantz (*__column 4, lines 1 – 6__*) would naturally use the Internet Protocol (IP) of Tanenbaum.

16.4. Regarding **claim 13**:

16.4.1.   Frantz does not specifically teach the UDP over IP network communications protocol.

16.4.2.   Tanenbaum appears to teach the UDP over IP network communications protocol (*__page 542, section 6.4.8__*).

16.4.3.   The motivation to use the art of Tanenbaum with the art of Frantz as

modified by IbmTechnicalDisclosure and McAlear would have been because an ordinary

artisan at the time of invention using the Internet communications line of Frantz

(*column 4, lines 1 – 6*) would naturally use the UDP over IP network communications

protocol because it is faster than establishing and releasing a connection (*Tanenbaum,*

page 542, section 6.4.8).

16.4.4.   Therefore, as discussed above, it would have been obvious to the

ordinary artisan at the time of invention to use the art of Tanenbaum with the art of

Frantz as modified by IBMTechnicalDisclosure and McAlear to produce the claimed

invention.

17. **Claim 28 – 29 and 31** is rejected under 35 U.S.C. 103(a) as being unpatentable over

Frantz (U.S. Patent 6,636,929, October 21, 2003) in view of IbmTechnicalDisclosure (IBM

Technical Disclosure Bulletin, "Multiple Control Unit/Device Emulator for Testing

Computer Programs", September 1971, Volume 14, Issue 4, pages 1212 - 1213), further in

view of McAlear (U.S. Patent 6,389,029).

17.1. The art of Frantz is directed toward a system in which a first computer couples to

an interface unit via a Universal Serial Bus (USB), and the interface unit couples to a

remote computer (*column 1, lines 22 –32*) via a network link (*column 7, lines 9 – 15;*

and figure 1, element 175; and column 3, lines 65 – 68; and column 4, lines 1 - 30)

such that peripherals and input/output devices of the remote computer appear as

peripherals and input/output devices of the first computer (*column 1, lines 22 –32*).

17.2. The art of IbmTechnicalDisclosure is directed toward using a second computer to

emulate multiple input/output devices such that it can be attached to a first computer for

testing the first computer system and its computer programs (*page 1212, first*

__paragraph__). It also provides the capability for testing programs that drive currently

unavailable devices (*__page 1212, first paragraph__*).

17.3. The art of McAlear is directed to a local area network incorporating the universal

serial bus (USB) protocol (*__Title__*).

17.4. Frantz appears to teach USB peripheral devices (*__Abstract, third sentence__*).

17.5. Frantz appears to teach receiving USB command messages from the host at an

interface device (*__figure 1, elements 125 and 150; figure 2, elements 100, 150, 80, 86,__*

__87, 125, 181; and column 3, lines 65 –67; and column 4, lines 1 – 16__).

17.6. Frantz appears to teach sending the command data packets from the interface

device to one or more peripherals over network communications media (*__figure 2, elements__*

__150, 200, 170, 175, 270, 285, 225, 235, 280, 290, 240, 245, 295; and column 3,__

__lines 65 –67; and column 4, lines 1 – 47__).

17.7. Frantz appears to teach receiving response data packets from the one or more

peripherals over the network communications media at the interface device, wherein the

response data packets are formatted in accordance with a network communications

protocol (*__figure 2, elements 150, 200, 170, 175, 270, 285, 225, 235, 280, 290, 240,__*

__245, 295; and column 3, lines 65 –67; and column 4, lines 1 – 47__).

> **17.7.1.** Regarding (*__figure 2, elements 150, 200, 170, 175, 270, 285, 225,__*
>
> *__235, 280, 290, 240, 245, 295; and column 3, lines 65 –67; and column 4, lines 1__*
>
> *__– 47__*); since in column 4, lines 1 – 16, it is recited that communication is through
>
> methods such as Ethernet or Internet, it would have been obvious that the response
>
> data packets were formatted in accordance with a network communications protocol.

17.8. Frantz appears to teach unpackaging response messages from the received response

data packets (*figure 2, elements 270, 175, 170, 195,180, 181, 125, 87, 86, 80, 155,*

190, 165; column 3, lines 65 –67; and column 4, lines 1 – 47; and figure 3, elements

155, 325, 320, 25, 315, and connecting communication links).

      17.8.1.   Regarding (*figure 2, elements 270, 175, 170, 195,180, 181, 125, 87,*

      86, 80, 155, 190, 165; column 3, lines 65 –67; and column 4, lines 1 – 47; and

      figure 3, elements 155, 325, 320, 25, 315, and connecting communication links);

      it would have been obvious that the system was unpackaging response messages from

      the received response data packets.

17.9. Frantz appears to teach sending the unpackaged, response messages from the

interface device to the host (*figure 2, elements 270, 175, 170, 195,180, 181, 125, 87,*

86, 80, 155, 190, 165; column 3, lines 65 –67; and column 4, lines 1 – 47; and

figure 3, elements 155, 325, 320, 25, 315, and connecting communication links).

      17.9.1.   Regarding (*figure 2, elements 270, 175, 170, 195,180, 181, 125, 87,*

      86, 80, 155, 190, 165; column 3, lines 65 –67; and column 4, lines 1 – 47; and

      figure 3, elements 155, 325, 320, 25, 315, and connecting communication links);

      it would have been obvious that the system was sending unpackaged, response

      messages to the host.

17.10. Frantz does not specifically teach receiving USB command messages from the *in-*

test host.

17.11. Frantz does not specifically teach packaging the received USB command messages in command data packets formatted in accordance with a network communications protocol.

17.12. Frantz does not specifically teach sending the command data packets from the interface device to one or more peripheral *emulators* over network communications media.

17.13. Frantz does not specifically teach receiving response data packets from the one or more peripheral *emulators* over the network communications media at the interface device, wherein the response data packets are formatted in accordance with a network communications protocol.

17.14. Frantz does not specifically teach unpackaging *USB* response messages from the received response data packets.

17.15. Frantz does not specifically teach sending the unpackaged, *USB* response messages from the interface device to the *in-test* host.

17.16. IbmTechnicalDisclosure appears to teach an *in-test* host (*page 1212, first paragraph labeled 2p*) and a peripheral *emulator* (*page 1212, first paragraph labeled 2p*).

17.17. McAlear appears to teach:

> **17.17.1.**   packaging received USB command messages in command data packets formatted in accordance with a network communications protocol (**column 24, lines 25 – 55**);

17.17.2.   unpackaging _**USB**_ response messages from received response data

packets (**column 24, lines 25 – 55**);

17.18. The motivation to use the art of IbmTechnicalDisclosure with the art of Frantz

would have been because an ordinary artisan at the time of invention needing to test a first

computer communicating with a USB peripheral device across a network, where the

peripheral device was not yet available (as taught in IbmTechnicalDisclosure), would have

emulated the USB peripherals (as taught in Frantz, in the Abstract, third sentence) and

used the art of IbmTechnicalDisclosure with the art of Frantz to perform the test. The

ordinary artisan would have known that a cost and time benefit would result from testing a

first computer before the peripheral device was available.

17.19. The motivation to use the art of McAlear with the art of Frantz would have been the

benefit recited in McAlear that the invention overcomes the reach limitations of the USB

protocol (**column 9, lines 11 – 15**), which would have been recognized by the ordinary

artisan as overcoming a significant limitation of the USB protocol.

17.20. Therefore, as discussed above, it would have been obvious to the ordinary artisan at

the time of invention to use the art of Frantz with the art of IbmTechnicalDisclosure and

McAlear to produce the claimed invention.

17.21. Regarding **claim 29**:

17.21.1.   Frantz appears to teach USB peripheral devices (_**Abstract, third**_

**sentence**).

17.21.2.   Frantz does not specifically teach emulating one or more different USB

peripherals within the one or more peripheral emulators to create the incoming USB

messages.

17.21.3.   IbmTechnicalDisclosure appears to teach emulating one or more different

peripherals within one or more peripheral emulators to create the incoming peripheral

messages (*page 1212, first paragraph labeled 2p and second paragraph*).

>   **17.21.3.1.** Regarding (*page 1212, first paragraph labeled 2p and second*
>
>   ***paragraph***); it would have been obvious that the peripheral emulator creates
>
>   incoming peripheral messages.

17.22. Regarding **claim 31**:

17.22.1.   Frantz appears to teach an Ethernet network communications protocol

(*column 4, lines 1 – 6*).

>   **17.22.1.1.** Regarding (*column 4, lines 1 – 6*); it would have been obvious that an
>
>   Ethernet communications line uses an Ethernet network communications protocol.

18. **Claim 30** is rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent

6,636,929, October 21, 2003) in view of IbmTechnicalDisclosure (IBM Technical Disclosure

Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs",

September 1971, Volume 14, Issue 4, pages 1212 - 1213), further in view of McAlear (U.S.

Patent 6,389,029) as applied to **claims 28 – 29 and 31** above, in view of McConnell

(McConnell, Steve; "Code Complete", 1993, Microsoft Press).

18.1. Frantz as modified by IbmTechnicalDisclosure and McAlear teaches a method of testing an in-test host's support of USB peripherals as recited in **claims 28 – 29 and 31** above.

18.2. The art of McConnell is directed toward software construction (Book cover), including testing (*page 589, chapter title*).

18.3. Frantz appears to teach response messages in response to the packaged command messages and packaging said response messages in the response data packets (*figure 2; and figure 3, elements "communicate over appropriate interface", "instructions", and "remote activity translated to USB", elements 155 and 315; and column 5, lines 65 – 67; and column 6, lines 1 – 67*).

> **18.3.1.** Regarding (*figure 2; and figure 3, elements "communicate over appropriate interface", "instructions", and "remote activity translated to USB", elements 155 and 315; and column 5, lines 65 – 67; and column 6, lines 1 – 67*); it would have been obvious that there were response messages in response to the packaged command messages and that the said response messages were packaged in response data packets.

18.4. Frantz does not specifically teach creating *abnormal* USB response messages in response to the packaged USB command messages and packaging said abnormal USB response messages in the response data packets in order to test the *in-test* host's ability to handle such abnormal USB response messages.

18.5. IbmTechnicalDisclosure appears to teach an in-test host (*page 1212, first paragraph and second paragraph*).

18.6. McConnell appears to teach testing with abnormal parameters in order to test the software's ability to handle such abnormal parameters (*page 589, and page 603, section "Classes of Bad Data", especially bullet "the wrong kind of data (invalid data)"*).

18.7. The motivation to use the art of McConnell with the art of Frantz as modified by IbmTechnicalDisclosure and McAlear would have been the testing methods taught in McConnell, which would have been recognized as valuable time and cost saving methods by the ordinary artisan.

18.8. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of McConnell with the art of Frantz as modified by IBMTechnicalDisclosure and McAlear to produce the claimed invention.

19. **Claims 32 and 33** are rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent 6,636,929, October 21, 2003) in view of IbmTechnicalDisclosure (IBM Technical Disclosure Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs", September 1971, Volume 14, Issue 4, pages 1212 - 1213), further in view of McAlear (U.S. Patent 6,389,029) as applied to **claims 28 – 29 and 31** above, further in view of Tanenbaum (Tanenbaum, Andrew S.; "Computer Networks", third edition, 1996, Pentice-Hall).

19.1. Frantz as modified by IbmTechnicalDisclosure and McAlear teaches a method of testing an in-test host's support of USB peripherals as recited in **claims 28 – 29 and 31** above.

19.2. The art of Tanenbaum is directed to computer communication networks (*Title*).

19.3. Regarding **claim 32**:

19.3.1.   Frantz does not specifically teach the IP network communications

protocol.

19.3.2.   Tanenbaum appears to teach the IP network communication protocol

(*page 412, last paragraph that starts with "The glue . . ."*).

19.3.3.   The motivation to use the art of Tanenbaum with the art of Frantz would

have been because an ordinary artisan at the time of invention using the Internet

communications line of Frantz (*column 4, lines 1 – 6*) would naturally use the Internet

Protocol (IP) of Tanenbaum.

19.4.   Regarding **claim 33**:

19.4.1.   Frantz does not specifically teach the UDP over IP network

communications protocol.

19.4.2.   Tanenbaum appears to teach the UDP over IP network communications

protocol (*page 542, section 6.4.8*).

19.4.3.   The motivation to use the art of Tanenbaum with the art of Frantz would

have been because an ordinary artisan at the time of invention using the Internet

communications line of Frantz (*column 4, lines 1 – 6*) would naturally use the UDP

over IP network communications protocol because it is faster than establishing and

releasing a connection (*Tanenbaum, page 542, section 6.4.8*).

19.4.4.   Therefore, as discussed above, it would have been obvious to the

ordinary artisan at the time of invention to use the art of Tanenbaum with the art of

Frantz as modified by IBMTechnicalDisclosure and McAlear to produce the claimed

invention.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to the applicant's

disclosure:

20.1. Tanenbaum, Andrew S.; "Computer Networks", third edition, 1996, Prentice Hall,

pages 404 - 405; teaches common knowledge in the art regarding embedding a network

protocol inside another network protocol in order to bridge between two networks.

20.2. BEN-DOR et al. (U.S. Patent Application Publication 2002/0141418) teaches USB

tunneling

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Russell L. Guill whose telephone number is 571-272-7955. The
examiner can normally be reached on Monday – Friday 9:00 AM – 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the
organization where this application or proceeding is assigned is 571-273-8300. Any inquiry of
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